CLAIMS

1. An environmental protection hood comprising a manifold having an element external to the hood, for receiving supply of services needed within the hood, and an element internal to the hood, for providing those services where required.

2. --- A hood as claimed in claim 1, wherein the external element has an inlet for receiving a breathing supply and wherein the internal element is adapted for feeding an oxygen mask.

3. A hood as claimed in any preceding claim, wherein the external element has an inlet for receiving a liquid.

4. A hood according to any preceding claim, wherein the internal element is adapted for feeding a demisting jet of air for demisting or inhibiting misting of a window of the hood and/or for ventilating the hood.

5. A hood according to Claim 4 as dependant on Claim 2 wherein the external element has an inlet for receiving air disposed within the inlet for receiving a breathing supply or vice versa.

6. A supply conduit assembly for connection to a hood according to Claim 4 or Claim 5 comprising a breathing gas conduit, an air conduit and a diverter for diverting air from the air conduit to the breathing conduit if a supply of breathing gas is insufficient.

7. An assembly according to Claim 6 comprising a powered impeller for increasing air pressure in the air conduit.

8. An assembly according to Claim 6 or Claim 7 wherein the air conduit

comprises a filter for removing contaminants from the air passing therethrough.

9. An assembly according to any of claims 6 to 8 wherein the diverter comprises a normally-closed valve between the breathing gas conduit and the air conduit.

10. An assembly according to any of claims 6 to 9 comprising a non-return valve to prevent air flowing back from the hood when air is diverted to the breathing conduit.

11. A hood according to Claim 4 or Claim 5 in combination with a supply conduit assembly according to any of claims 6 to 10.

12. A manifold for a hood according to any of claims 1 to 5 or for an assembly according to any of claims 6 to 10.

13. An air supply system for supplying air to an oxygen mask, comprising a junction having a pressure switch adapted to supply air to a mask from a pressurised source when such is present and, in the absence of a pressurised source, from a secondary source adapted to be positively buoyant in water.

14. A system as claimed in claim 13, wherein the secondary source comprises an element, for example a filter, for removing contaminants from air to be supplied.

15. A system as claimed in claim 13 or claim 12, wherein the secondary source comprises a buoyancy device which is triggered by contact with water.

16. A system as claimed in any of claims 13 to 15, wherein the secondary source comprises an element, for example baffles, for inhibiting ingress of water.

17. A device for supplying air to an oxygen mask, comprising an air inlet, an outlet for carrying air towards the mask, the device becoming positively buoyant in water upon contact with water.

18. A buoyancy aid or life vest comprising a device as claimed in Claim 17.

19. A buoyancy aid or life vest as claimed in Claim 18, wherein the air supply device is releasably attached to the buoyancy aid or life vest.

20. A buoyancy aid or life vest as claimed in Claim 19, wherein the device is adapted to be released from the buoyancy aid or life vest upon contact with water and/or when the device becomes positively buoyant.

21. A personalised cap for a helmet, the cap being bespoke to a specific wearer so as precisely to fit the helmet to the wearer's head, the cap comprising a crown portion and a separate brow portion, the crown and brow portion being contiguous with each other.

22. A cap as claimed in claim 21, wherein the brow portion interlocks with the crown portion.

23. A cap as claimed in claim 21 or claim 22 wherein at least one said portion is of impact or energy absorbing material.

24. A cap as claimed in claim 23, wherein the brow portion is thinner than the crown portion.

25. A cap as claimed in claim 24, wherein the brow portion is of a different impact or energy absorbing material to the crown portion.

26. A cap according to any of claims 21 to 25 having an internal form which is bespoke to a specific wearer so as precisely to fit the cap to the wearer's head and an outer form adapted to fit in a generic environmental protection hood such that the hood sits smoothly over the outer surface of the cap.

27. Protective headgear comprising a personalised cap according to any of claim 26 and an environmental protection hood.

28. An environmental protection hood for use under a protective helmet, comprising an aperture containing a window adjacent the periphery of which is adapted to engage with a personalised cap according to claim 26.

29. A hood as claimed in claim 28, comprising formations, adjacent the periphery of the aperture, for engaging with an opening in a helmet.

30. A helmet comprising a personalised cap as claimed in any of claims 21 to 26.

31. A helmet as claimed in claim 30 when dependent from claim 24 or claim 25, wherein a brow portion of the helmet is of a smaller radius than a crown portion to permit the attachment over the brow portion of a helmet mounted display equipment.

32. A helmet as claimed in claim 30 or claim 31, wherein the brow portion of the cap is removable from the helmet without disturbing the crown portion, whereby one brow portion can be substituted for another.

33. Protective headgear as claimed in any of claims 27 to 29, further comprising a helmet, the external form of the personalised cap, the hood and the internal form of the helmet being adapted such that, when the cap is worn inside the hood, which in turn is worn inside the helmet, the helmet is repeatably positioned relative to the head of the wearer.

34. A method of manufacturing a helmet comprising a personalised internal cap which positions the helmet on the wearer's head, the method comprising a prior determination of the shape of the wearer's head by a measurement device followed by the production of a kit of parts for assembly into said personalised cap, the kit comprising a crown portion and alternative brow portions, a first said brow portion conforming to the wearer's head when wearing an environmental protection hood,

and a second said brow portion conforming to the wearer's head without said hood.

35. A method as claimed in claim 34, comprising providing also alternative crown portions, a first said crown portion conforming to the wearer's head when wearing an environmental protection hood, and a second said crown portion conforming to the wearer's head without said hood.

36. A method as claimed in claim 34 or 35, wherein the measurement device is a non-contact measuring device.

37. A method as claimed in claim 34, 35 or 36, wherein during the prior determination the relative positions of the wearer's eyes and the measured portion of his head are determined.

38. A kit of parts for precisely fitting a helmet to a wearer's head, comprising a crown portion and first and second brow portions of a personalised internal cap which position the helmet on the wearer's head, the first and second brow portions having respectively been produced to align the helmet on the wearer's head to a predetermined position relative to his eyes when the wearer respectively is wearing and is not wearing an environmental protection hood.

39. A kit of parts as claimed in claim 38 comprising a second crown portion, the first and second crown portions having respectively been produced to align the helmet on the wearer's head to a predetermined position relative to his eyes when the wearer respectively is wearing and is not wearing an environmental protection hood.

40. A method or a kit of parts according to any of claims 34 to 39, wherein a said crown portion engages the first brow portion or the second brow portion to form the personalised internal cap.

41. A method or a kit of parts as claimed in any of claims 34 to 40, wherein the

first brow portion is shaped to accommodate a visor of the environmental protection hood.

40. A helmet comprising a personalised internal cap formed from a kit of parts as claimed in any of claims 34 to 41.

41. Protective apparel comprising a helmet as claimed in claim 40 or manufactured by a method according to any of claims 34 to 37, 40 or 41, in combination with an environmental protection hood.

42. An environmental protection hood for use under a protective helmet, comprising an aperture containing a window adjacent the periphery of which the hood is adapted to engage with an opening in a helmet.

43. A hood as claimed in claim 42, wherein the window is reversibly removable from the hood.

44. A hood as claimed in claim 43, comprising engaging formations for engaging with and retaining the window.

45. A hood as claimed in any of claims 42 to 44, further comprising a rigid frame.

46. A hood as claimed in any of claims 42 to 45, further comprising fittings for engaging with a respiratory mask to locate such a mask when used by a wearer of the hood.

47. A hood as claimed in any of claims 42 to 46, further comprising a removable mask portion.

48. A hood as claimed in claim 47 when dependent upon claim 45, wherein the mask portion comprises a further rigid frame adapted to seal against the rigid frame.

49. A mask as claimed in claim 47 or 48 when dependent upon claim 45, wherein the fittings are provided on the rigid frame of the mask portion.

50. An environmental protection hood for use over a helmet and a respiratory mask, the hood being adapted to entirely enclose the helmet and mask.

51. A hood as claimed in claim 50, comprising an aperture having situated therein a window through which a wearer of the hood may see, a selectively releasable seal being provided adjacent an edge of the window such that an opening may be made in the hood.

52. An environmental protection hood for use over a helmet, comprising an aperture having situated therein a window through which a wearer of the hood may see, a selectively releasable seal being provided adjacent an edge of the window such that an opening may be made in the hood.

53. A hood as claimed in claim 51 or 52, adapted to engage the window with a raisable front portion of a helmet, such that when the hood and helmet are worn together, the window and the front portion of the helmet may be raised and lowered together.

54. A hood as claimed in any of claims 51 to 53, further comprising fittings for engaging with a respiratory mask to locate such a mask when used by a wearer of the hood.

55. A hood according to any of claims 42 to 48 or 50 to 54 comprising a sleeve adapted to receive a hose for delivering air to a respiratory mask worn by a wearer of the hood.

56. An environmental protection hood for use over a respiratory mask, comprising a sleeve adapted to receive a hose for delivering air to a respiratory mask worn by a wearer of the hood.

57. A hood according to claim 55 or 56, wherein the sleeve is formed of the same material as the hood.

58. A hood according to any of claims 55 to 57, wherein the distal end of the sleeve with respect to the aperture of the hood has an element inside the sleeve for engaging with a hose by means of which the hose may be fed with air.

59. A hood according to claim 58, wherein the distal end of the sleeve has a further element outside the sleeve for engaging with an air supply means of an aircraft, by means of which the hose may be fed with air.

60. A hood as claimed in any of claims 55 to 59, wherein the sleeve further comprises at its distal end an element for attaching a further hose for providing demisting air to the hood adjacent the head of a wearer.

61. A hood according to claim 60, wherein a further hose for providing demisting air runs from the distal end of the sleeve to a portion of the hood adapted in use to be adjacent the head of a wearer.

62. An environmental protection hood according to any of claims 42 to 61 comprising a transparent portion which extends at least partially, preferably fully around a window or a goggle portion

63. A respiratory mask air supply hose comprising an enclosure forming a conduit through which air may pass and a structural element for maintaining the cross-section of the conduit.

64. A hose as claimed in claim 62, wherein the enclosure is formed of silicone rubber or a fabric material.

65. A hose as claimed in claim 62 or 63, wherein the structural element is formed

of an extruded thermoplastics material.

66. A hose as claimed in any of claims 62 to 64, wherein the structural element comprising a left-handed helix and a right handed helix, both helices being coaxial with the conduit.

67. A hose as claimed in claim 65, wherein the helices are arranged such that, when the hose is compressed or extended, substantially zero torque around the axis of the hose results.

68. A hose as claimed in any of claims 62 to 66, wherein the structural element comprises a plurality of left-handed helices and/or a plurality of right-handed helices.

69. A hose as claimed in any of claims 62 to 67, wherein the enclosure is formed of a material impervious to an environmental hazard.

70. A hose as claimed in any of claims 62 to 68, wherein the enclosure is formed by bonding long edges of an elongate sheet of the material.

71. A hose as claimed in any of claims 62 to 69 wherein the enclosure is located within the structural element.

72. A hose as claimed in claim 70, wherein the structural element is bonded to the enclosure.

73. A hose as claimed in any of claims 62 to 71, wherein the enclosure is formed of an elongate sheet of the material wound around the structural element in an overlapping helical arrangement.

74. A hose as claimed in any of claims 62 to 72 wherein the structural element is extruded.

75. A hose as claimed in any of claims 62 to 73 wherein the structural element is formed of different material from that of the enclosure.

76. A hose as claimed in any of claims 62 to 74 wherein the structural element comprises a mesh.

77. A respirator mask comprising a first portion housing at least one valve and a second portion adapted to seal around the nose and mouth of a wearer, the first and second portions being formed of different materials.

78. A mask as claimed in claim 76, wherein the first portion is formed of a thermoplastics material.

79. A mask as claimed in claim 76 or 77, wherein the second portion is formed of a resilient material.

80. A mask as claimed in any of claims 76 to 78, wherein the second portion is detachable.

81. A mask as claimed in any of claims 76 to 79 wherein the second potion is bespoke to an individual wearer.

82. A mask as claimed in any of claims 76 to 80, wherein the first portion has at least one integrally-formed portion of a valve.

83. A mask comprising a housing portion having at least one integrally-formed portion of a valve.

84. A mask as claimed in claim 81 or 82, wherein the at least one portion of a valve is a chamber of the valve.

85. A mask as claimed in claim 81 or 82, wherein the at least one portion of a

valve is a valve seat.

86. A mask as claimed in any of claims 81 to 84, wherein the at least one portion of a valve is a portion of an inspiratory valve.

87. A mask as claimed in any of claims 81 to 85, wherein the at least one portion of a valve is a portion of an expiratory valve.

88. A fitting for attaching a respirator mask to a helmet comprising a helmet connector for engaging with a helmet, and a mask connector for receiving webbing for attaching the fitting to the mask, the mask connector being adapted to be movable such that the direction at which webbing in the mask connector extends from the fitting relative to the position of the helmet engaging means may be adjusted.

89. A fitting as claimed in claim 87, comprising a plurality of independently-moveable mask connectors.

90. A fitting as claimed in claim 87 or 88, wherein the mask connector comprises a disc rotatably-mounted in the fitting, the disk comprising a slot for receiving webbing.

91. A fitting as claimed in any of claims 87 to 89, wherein the mask connector comprises an arcuate insert slidably mounted in an arcuate slot in the fitting, the insert comprising a further slot for receiving webbing.

92. A breathing mask assembly for use with a helmet and a hood worn within the helmet, the mask including a component for location within the hood and a component for location externally of the hood.

93. A breathing mask according to Claim 91 wherein one of the components is provided or associated with a projection capable of being pressed into the material

of the hood, and the other component has an opening for receiving and retaining the projection and the portion of the hood to which it is applied.

94. A breathing mask as claimed in Claim 92, wherein the projection has an enlarged head which is shaped to be retained in the opening.

95. A breathing mask as claimed in Claim 93, wherein the opening is defined by resilient material so that the projection is a snap-fit therein.

96. A breathing mask comprising a face piece to be worn within a hood and a cover to be worn externally of the hood and attachable to the helmet, the face piece being provided or associated with a stud with an enlarged head, the stud being retainable within an opening in the cover with a portion of the hood trapped between the stud and the cover.

97. A breathing mask having an outlet port, a valve associated with the outlet port, the valve opening when a wearer of the mask exhales, and a mechanism operable by the wearer for closing the port when the wearer exhales.

98. A breathing mask as claimed in Claim 96, wherein said mechanism comprises a cover for the port, the cover being capable of being depressed or otherwise moved manually to close the port.

99. A breathing mask, as claimed in Claim 97, wherein the cover is so shaped as to be readily identifiable by touch.

100. A breathing mask having an outlet port capable of being closed by the wearer at will.

101. A hood substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

102. A hose substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

103. A mask substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

104. A fitting substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

105. A personalised cap substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

106. Protective headgear substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

107. An air supply system substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

108. A device for supplying air to an oxygen mask substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

109. A buoyancy aid or life vest substantially as hereinbefore described with reference to, and/or as illustrated in, the accompanying drawings.

110. A personalised cap, a kit of parts, a helmet and protective apparel substantially as hereinbefore described with reference to the accompanying drawings.

111. Breathing apparatus substantially as hereinbefore described with reference to and as illustrated in Figures 21 and 22 or Figure 23 of the drawings.